

## “Rocky Pond”

Two students, Becky and Tom, spent a Saturday afternoon on the shores of a pond eating lunch. They watched a man in a boat loaded with rocks row to the middle of the pond. “Look at how low that boat is in the water!” exclaimed Becky. Once he was in the middle of the pond, the man began dumping the large rocks overboard.

“Well, there you go. No wonder the boat was so low in the water” said Tom.

When the last rock went over, the man began to row back to shore. Without the heavy load, the boat was riding high in the pond.

“Do you think the water level in the pond goes up as the man transfers the rocks from the boat to the pond and the boat rises in the water?” said Tom.

“No, I don’t think so” replied Becky. “The boat is higher in the water now that the rocks are not in it. When the boat was filled with rocks, it pushed the water level up. So if the boat is riding higher now, the water must have gone down.”

Tom and Becky decided to test their ideas by doing an experiment. Their investigation question was, **“What will happen to the water level of a pond when rocks carried in a boat are dropped overboard?”**

### **Predictions**

1. A. Consider the questions of Tom and Becky. Predict how the initial water level of the pond (when the rocks are in the boat) will compare to the final water level of the pond (after the rocks are dumped from the boat into the water).

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B. Why do you think so?

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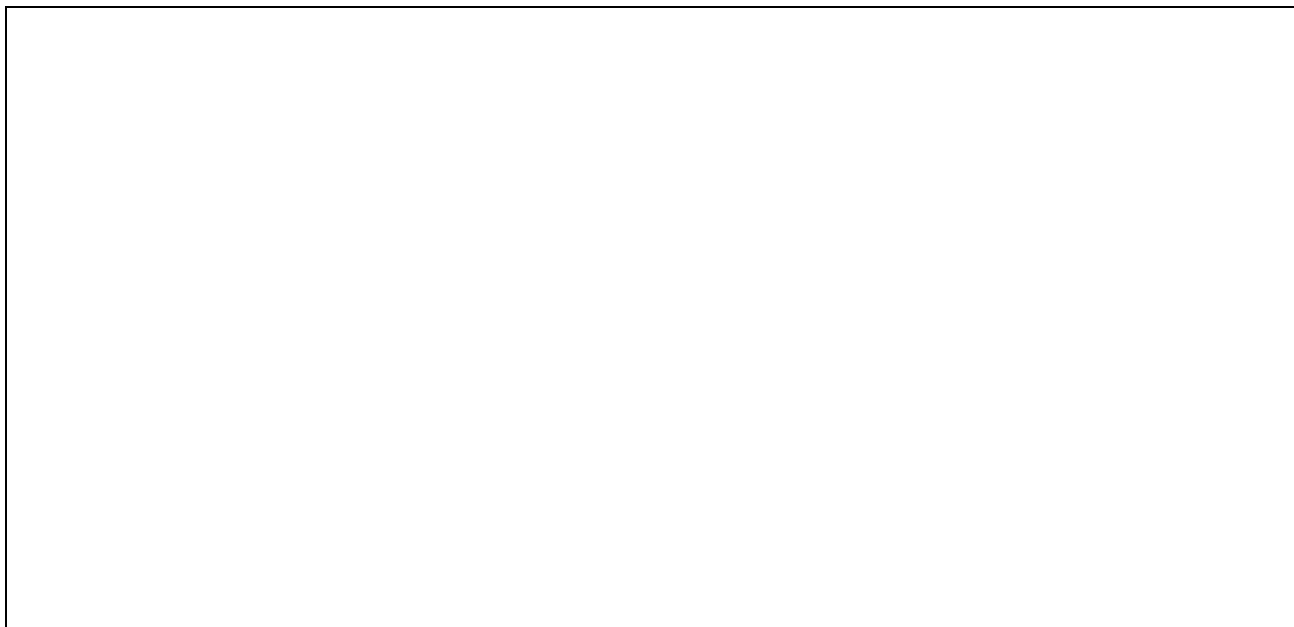
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Use the materials and experimental design to conduct your experiment.

### **Organizing and Explaining Results**

3. Before you organize your results into a data table, use the box below to clearly record your labeled observations in any way you choose.

A large, empty rectangular box with a thin black border, intended for recording observations before organizing them into a data table.

4. When you are finished, organize your results into a **table**.

A large, empty rectangular box with a thin black border, intended for organizing the results into a table.

5. A. Recall the prediction that you made. Do the results of your experiment support, or not support, your prediction?

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B. Using evidence from your data, describe why you came to this conclusion.

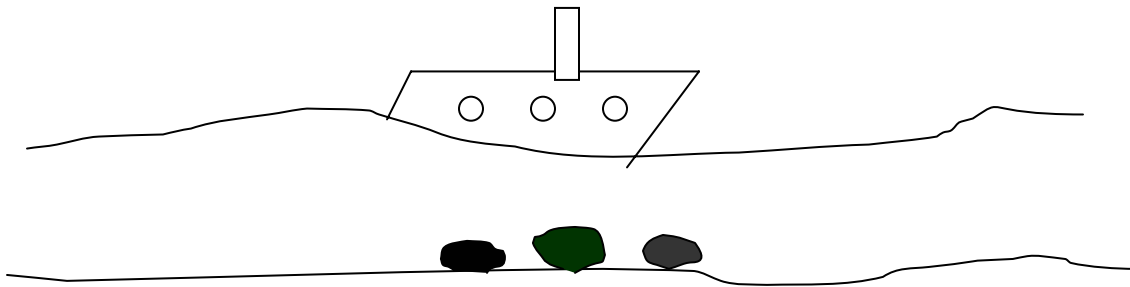
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6. Consider any forces which may be acting on the boat and the rocks. Show these forces by drawing arrows on the diagram below. Then label these arrows with the names of the forces.



7. Think about the results of your investigation, the property of density, and the forces acting on objects in water. Explain why the rocks sank to the bottom of the pond when they were thrown overboard, but did not sink the boat when they were in it.

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8. Based on the results of your investigation, what new question do you have that could be explored through experimentation?

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